

$f_2(2340)$

$$J^G(J^{PC}) = 0^+(2^{++})$$

 $f_2(2340)$ MASS

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
2346^{+21}_{-10} OUR AVERAGE				
$2346 \pm 8^{+22}_{-6}$		¹ ABLIKIM	22C BES3	$J/\psi \rightarrow \gamma \eta' \eta' \rightarrow 4/5 \gamma 2(\pi^+ \pi^-)$
$2362^{+31+140}_{-30-63}$	5.5k	² ABLIKIM	13N BES3	$e^+ e^- \rightarrow J/\psi \rightarrow \gamma \eta \eta$
2339 ± 55		³ ETKIN	88 MPS	$22 \pi^- p \rightarrow \phi \phi n$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
2350 ± 7	80k	⁴ UMAN	06 E835	$5.2 \bar{p} p \rightarrow \eta \eta \pi^0$
2412^{+28}_{-32}		⁵ LONGACRE	04 RVUE	$22 \pi^- p \rightarrow \phi \phi n, 450$ $p p \rightarrow p_f 4\pi p_s$
2392 ± 10		BOOTH	86 OMEG	$85 \pi^- \text{Be} \rightarrow 2\phi \text{Be}$
2360 ± 20		LINDENBAUM	84 RVUE	

¹ From a partial wave analysis of the systems (γX) , with $X \rightarrow \eta' \eta'$, and $(\eta' X)$, with $X \rightarrow \gamma \eta'$ in the decay $J/\psi \rightarrow \gamma \eta' \eta'$. The intermediate resonance X is parametrized by a constant-width, relativistic Breit-Wigner.

² From partial wave analysis including all possible combinations of 0^{++} , 2^{++} , and 4^{++} resonances.

³ Includes data of ETKIN 85. The percentage of the resonance going into $\phi \phi 2^{++} S_2$, D_2 , and D_0 is 37 ± 19 , 4^{+12}_{-4} , and 59^{+21}_{-19} , respectively.

⁴ Statistical error only.

⁵ From a four pole K-matrix reanalysis of ETKIN 88 and BARBERIS 00C data.

 $f_2(2340)$ WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
331^{+27}_{-18} OUR AVERAGE				
$332 \pm 14^{+26}_{-12}$		¹ ABLIKIM	22C BES3	$J/\psi \rightarrow \gamma \eta' \eta' \rightarrow 4/5 \gamma 2(\pi^+ \pi^-)$
$334^{+62+165}_{-54-100}$	5.5k	² ABLIKIM	13N BES3	$e^+ e^- \rightarrow J/\psi \rightarrow \gamma \eta \eta$
319^{+81}_{-69}		³ ETKIN	88 MPS	$22 \pi^- p \rightarrow \phi \phi n$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
218 ± 16	80k	⁴ UMAN	06 E835	$5.2 \bar{p} p \rightarrow \eta \eta \pi^0$
362^{+100}_{-53}		⁵ LONGACRE	04 RVUE	$22 \pi^- p \rightarrow \phi \phi n, 450$ $p p \rightarrow p_f 4\pi p_s$
198 ± 50		BOOTH	86 OMEG	$85 \pi^- \text{Be} \rightarrow 2\phi \text{Be}$
150^{+150}_{-50}		LINDENBAUM	84 RVUE	

¹ From a partial wave analysis of the systems (γX) , with $X \rightarrow \eta' \eta'$, and $(\eta' X)$, with $X \rightarrow \gamma \eta'$ in the decay $J/\psi \rightarrow \gamma \eta' \eta'$. The intermediate resonance X is parametrized by a constant-width, relativistic Breit-Wigner.

²From partial wave analysis including all possible combinations of 0^{++} , 2^{++} , and 4^{++} resonances.
³Includes data of ETKIN 85.
⁴Statistical error only.
⁵From a four pole K-matrix reanalysis of ETKIN 88 and BARBERIS 00c data.

$f_2(2340)$ DECAY MODES

Mode	Fraction (Γ_i/Γ)
$\Gamma_1 \quad \phi\phi$	seen
$\Gamma_2 \quad \eta\eta$	seen
$\Gamma_3 \quad \eta'\eta'$	seen

$f_2(2340)$ BRANCHING RATIOS

$\Gamma(\eta\eta)/\Gamma_{\text{total}}$					Γ_2/Γ
VALUE	DOCUMENT ID	TECN	COMMENT		
seen	UMAN	06	E835	$5.2 \bar{p}p \rightarrow \eta\eta\pi^0$	
$\Gamma(\eta'\eta')/\Gamma_{\text{total}}$					Γ_3/Γ
VALUE	DOCUMENT ID	TECN	COMMENT		
seen	¹ ABLIKIM	22C	BES3	$J/\psi \rightarrow \gamma\eta'\eta' \rightarrow 4/5\gamma 2(\pi^+\pi^-)$	

¹From a partial wave analysis of the systems (γX) , with $X \rightarrow \eta'\eta'$, and $(\eta' X)$, with $X \rightarrow \gamma\eta'$ in the decay $J/\psi \rightarrow \gamma\eta'\eta'$. The intermediate resonance X is parametrized by a constant-width, relativistic Breit-Wigner.

$f_2(2340)$ REFERENCES

ABLIKIM	22C	PR D105 072002	M. Ablikim <i>et al.</i>	(BESIII Collab.)
ABLIKIM	13N	PR D87 092009	M. Ablikim <i>et al.</i>	(BESIII Collab.)
UMAN	06	PR D73 052009	I. Uman <i>et al.</i>	(FNAL E835)
LONGACRE	04	PR D70 094041	R.S. Longacre, S.J. Lindenbaum	(BNL, CUNY)
BARBERIS	00C	PL B471 440	D. Barberis <i>et al.</i>	(WA 102 Collab.)
ETKIN	88	PL B201 568	A. Etkin <i>et al.</i>	(BNL, CUNY)
BOOTH	86	NP B273 677	P.S.L. Booth <i>et al.</i>	(LIVP, GLAS, CERN)
ETKIN	85	PL 165B 217	A. Etkin <i>et al.</i>	(BNL, CUNY)
LINDENBAUM	84	CNPP 13 285	S.J. Lindenbaum	(CUNY)